

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1-20. (*Canceled*)

21. (*Currently Amended*) A system for producing a pulse code modulation (PCM) signal, comprising:

a first filter configured to produce an in-phase signal $I(n)$ from a secondary audio program (SAP) signal;

a second filter configured to produce a quadrature-phase signal $Q(n)$ from the in-phase signal $I(n)$;

a FM demodulator configured to produce a FM demodulated signal substantially equal to $Z(n)/X(n)$, wherein $Z(n)$ and $X(n)$ are functions of $I(n)$ and $Q(n)$, the FM demodulator including a denominator device that estimates a value $1/X(n)$ based at least in part on a prior estimated value of $1/X(n)$ and a variable transition speed of $X(n)$; and

a third filter configured to produce the PCM signal from the FM demodulated signal,

wherein a control signal is used to change the variable transition speed of $X(n)$.

22. (*Previously Presented*) The system of claim 21, wherein $Z(n)$ is substantially equal to $[I(n)Q'(n) - I'(n)Q(n)]$ and $X(n)$ is substantially equal to $[I^2(n) + Q^2(n)]$.

23. (*Original*) The system of claim 21, wherein the SAP signal is a constant magnitude signal, a sine wave, or a cosine wave.

24. (*Original*) The system of claim 21, wherein the first filter is a band pass filter.

25. (*Original*) The system of claim 21, wherein the second filter is a Hilbert filter.

26-31. (*Canceled*)

32. (*Previously Presented*) The system of claim 21, wherein the denominator device estimates the value $1/X(n)$ based at least in part on the prior estimated value of $1/X(n)$ plus an error value.

33. (*Previously Presented*) The system of claim 32, wherein the error value is substantially equal to $[1-X(n)/X(n-1)]$.

34. (*Currently Amended*) The system of claim 33,
wherein the error value is scaled by a value of a scaling coefficient before being added to the prior estimated value of $1/X(n)$, and
wherein the value of the scaling coefficient is different from the error value.

35. (*Currently Amended*) The system of claim 34, wherein the value of the scaling coefficient is based on the variable transition speed of $X(n)$.

36. (*Currently Amended*) A system for producing a pulse code modulation (PAM) signal, comprising:

a first filter configured to produce an in-phase signal $I(n)$ from a secondary audio program (SAP) signal;

a second filter configured to produce a quadrature-phase signal $Q(n)$ from the in-phase signal $I(n)$;

a FM demodulator configured to produce a FM demodulated signal substantially equal to $Z(n)/X(n)$, wherein $Z(n)$ and $X(n)$ are functions of $I(n)$ and $Q(n)$, the FM demodulator including a denominator device that estimates a value $1/X(n)$ based at least in part on a prior estimated value of $1/X(n)$ and an error value substantially equal to $[1 - X(n)/X(n-1)]$; and

a third filter configured to produce the PCM signal from the FM demodulated signal,

wherein the error value is scaled by a value of a scaling coefficient based on ~~[[the]]~~ a variable transition speed of $X(n)$ before being added to the prior estimated value of $1/X(n)$,

wherein the value of the scaling coefficient is different from the error value,
and

wherein a control signal is used to change the value of the scaling coefficient based on the variable transition speed of $X(n)$.